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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,606	09/10/2004	Laurent Disdier	257512US2PCT	4908
22850	7590	06/26/2006	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			BAKER, DAVID S	
			ART UNIT	PAPER NUMBER
			2884	

DATE MAILED: 06/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/506,606	Applicant(s) DISDIER ET AL.	
	Examiner David S. Baker	Art Unit 2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-16 is/are pending in the application.
- 4a) Of the above claim(s) 1-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-12, 14 and 15 is/are rejected.
- 7) ☒ Claim(s) 13, 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 September 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>09/10/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Oath/Declaration

2. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not identify the mailing address of each inventor. A mailing address is an address at which an inventor customarily receives his or her mail and may be either a home or business address. The mailing address should include the ZIP Code designation. The mailing address may be provided in an application data sheet or a supplemental oath or declaration. See 37 CFR 1.63(c) and 37 CFR 1.76.

Drawings

3. Figures 1A, 1B, and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 9 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bay (*Capillary detectors in LHC-B*) in view of Karellas (US Patent #5,864,146 A).

Regarding claim 9, Bay discloses a two-dimensional ionizing particle detector comprising a matrix of detecting fibers (figure 1, page 2 paragraphs 1-3), including a scintillator to emit scintillation light (page 2 paragraphs 1-2), characterized in that each detecting fiber (figures 1 and 2) is composed of a glass capillary (page 2 paragraph 2) filled with a liquid scintillator (page 4 last paragraph, page 5 paragraph continued from page 4) for which the chemical composition is chosen such that the average free path of primary scintillation photons is negligible compared with the diameter of the capillary (page 4 last paragraph, page 5 paragraph continued from page 4). Bay does not disclose

expressly that each detecting fiber forms a pixel of the detector. Karellas discloses a detecting fiber bundle coupled to a CCD array in which each CCD has the dimensions of $20\mu\text{m}$ by $20\mu\text{m}$ (column 10 lines 24-41). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use couple the $20\mu\text{m}$ by $20\mu\text{m}$ CCD detectors to the $20\mu\text{m}$ diameter capillary tubes. The motivation for doing so would have been to produce a one-to-one correspondence between the scintillation capillaries and the detectors to attain greater spatial resolution.

Regarding claim 14, Bay and Karellas discloses all the limitations of claim 9. Additionally, Bay discloses that the capillaries have a diameter of $20\mu\text{m}$ (page 2 paragraph 4). Bay and Karellas do not disclose expressly that the capillaries have a length between 10 and 50mm or that the matrix has a section approximately equal to $100 \times 100\text{mm}^2$. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use capillaries that have a length between 10 and 50mm and to bundle together the capillary sets as disclosed by Bay until a matrix with a section approximately equal to $100 \times 100\text{mm}^2$ is achieved. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955). Additionally, the motivation for doings so would have been to improve the detector's efficiency by adapting the capillary bundle to dimensions complimentary to the detector.

Regarding claim 15, Bay discloses that the capillaries are placed in a vat comprising a first wall fitted with a glass port (fiber optic plate FOP, figure 2) transparent at a wavelength of the scintillation light and a second wall located in front of the first

wall and comprising a mirror reflecting at the wavelength (mirror with grid, figure 2), ionizing particles penetrating into the detector through the mirror (figure 2).

7. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bay (*Capillary detectors in LHC-B*) and Karellas (US Patent #5,864,146 A), and further in view of Franks (US Patent #4,359,641 A).

Regarding claim 10, Bay and Karellas disclose all the limitations of claim 9, but do not disclose expressly that the liquid scintillator is a binary liquid scintillator. Franks discloses the use of a binary liquid scintillator for use in a radiation to light conversion detector (column 4 lines 60-68, column 5 lines 1-21). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a binary liquid scintillator as the liquid scintillator in the ionizing particle detector. The motivation for doing so would have been that by using different types of liquid scintillator, different wavelengths of scintillation light could be achieved that would better match the detector used and radiation to be detected, thus increasing the versatility of the detector.

Regarding claim 11, Bay and Karellas disclose all the limitations of claim 9, but do not disclose expressly that the liquid scintillator is a ternary liquid scintillator. Franks discloses the use of a ternary liquid scintillator for use in a radiation to light conversion detector (column 5 lines 44-48, column 6 lines 1-18). The motivation for doing so would have been that by using different types of liquid scintillator, different wavelengths of scintillation light could be achieved that would better match the detector used and radiation to be detected, thus increasing the versatility of the detector.

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8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bay (*Capillary detectors in LHC-B*) and Karellas (US Patent #5,864,146 A), and further in view of Wojcik (US Patent #5,859,946 A).

Regarding claim 12, Bay and Karellas disclose all the limitations of claim 9, but do not disclose expressly that the solvent used in the liquid scintillator includes PXE. Wojcik discloses the use a PXE as a solvent base for liquid scintillators (column 1 lines 51-63). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use PXE as a base solvent for the liquid scintillator. The motivation for doing so would have been to improve the safety of handling the liquid scintillator and to improve the transmission characteristics of the glass capillaries since PXE has a low toxicity, is non-flammable, and has a high index of refraction (column 1 lines 51-63).

Allowable Subject Matter

9. Claims 13 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 13, the prior art of record does not teach or fairly suggest a liquid scintillator comprised of deuterium in combination with the limitations of claim 9.

Regarding claim 16, the prior art of record does not teach or fairly suggest wherein a vat comprises a top wall and bottom walls that comprise elastic membranes to absorb thermal expansion in combination with the limitations of claims 9 and 15.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Baker whose telephone number is 571-272-6003. The examiner can normally be reached on MTWRF 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

David S Baker
Examiner
Art Unit 2884

DSB


DAVID PORTA
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